

### **REMARKS**

Applicants respectfully request reconsideration of the claims in view of the following remarks. Claims 1 and 3-5 have been amended. Claim 6 is new. After entry of the amendment, claims 1-6 will be pending. Applicants submit the amendment is supported by the specification, including for example at page 6, lines 17-22, and does not introduce any new matter.

#### **Rejections Under 35 U.S.C. § 103**

(1) Claims 1-4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mitsuda (U.S. 4,396,636) in view of Mayr (Appl. Environ. Microbiol., 69(8):4697-4705). Applicants respectfully traverse this rejection.

The process described in the present application is directed to overcoming obstacles specific to a distant country like Chile to market perishable meat products, especially seafood products. Perishable meat products must be handled expeditiously as delays in shipment to Europe from a distant country like Chile may significantly affect the marketability of the perishable meat products. For example, in 1987 a 40 ton air shipment of fresh toothfish from Chile to Madrid, Spain arrived in Madrid on a Saturday was not unloaded until the next working day. The delay in unloading of the shipment of fresh toothfish was such that the fish were no longer in condition for being sold at market. Moreover, in countries such as Europe, fresh meat products such as fish can be sold at much greater prices (as much as 4:1) compared to the same fish that is frozen.

To address the problems associated with shipping perishable meat products to distant foreign markets, Applicants began to experiment with the objective of offering a natural product, with original features as a fresh product, that could be shipped without incurring the high demands and costs associated with air transport. After many years of experimentation, testing, and validation, Applicants achieved and validated the claimed process. The claimed process is not comparable to previously known industrial processes and provides a preserved food product having the organoleptic properties of fresh meat, even after tens of months of being treated by the process.

A fresh product is a product with the same characteristics of a recently produced or obtained product, like a product made just before the present time. Accordingly, a traditional frozen product does not comply with the features of a fresh product. The method of the present invention is a physical and natural process, which excludes chemicals and is founded on the application of steps in a specific sequence and timing in combination with utilizing packaging materials having strict and defined properties of gas and water vapor permeability (see, for example, the table at page 8 of the specification) that results in the preservation of foods in their natural and original state for an extended period of time (i.e. tens of months). Prior to filing of the present application, the results of the presently claimed process was certified by CESMEC Laboratories, Santiago de Chile, as presented in Exhibit 1 (attached), where the laboratory proved the state of the preserved meat as "equivalent to fresh" on a sample of 13 months from the preservation process, with best properties of color, smell, texture and taste compared to a "fresh" food equivalent.

None of the cited references discloses a process that provides a preserved product having organoleptic properties similar to a fresh food product that is suitable for consumption after an extended period of time (i.e. several tens of months) while maintaining organoleptic properties equivalent to a fresh food product. Specifically, none of the cited references alone or in combination disclose or suggest a preserved food product having such fresh organoleptic properties or a process comprising the presently claimed sequential steps of cutting the meat and immediately quick freezing the cut meat, packaging the meat, vacuum sealing the meat, and freezing the meat under the conditions recited in the claims that provides a preserved food product having such fresh organoleptic properties after an extended period of time.

Fluid retention is an important aspect of the claimed process to provide a preserved meat product having organoleptic properties similar to a fresh food product. The combination of freezing and packing steps in the particular order and under the particular time and temperature conditions recited in the claims retains the fluids of the meat and allows the defrosted meat product to retain the "fresh product" juiciness and taste. In the claimed process, the meat is subjected to an initial quick freezing process of the type IQF. IQF does not include a freezing medium.

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also contains a motivation or suggestion to modify or combine the references. *In re Mills*, 916 F.2d 680, 682 (Fed. Cir. 1990). “[A] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.” MPEP § 2141.02 citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983) *cert. denied*, 469 U.S. 851 (1984). It is improper to combine references where the references teach away from their combination. MPEP § 2145(X)(D)(2) citing *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983). If a proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. MPEP § 2144(VI) citing *In re Ratti*, 270 F.2d 810 (CCPA 1959).

Applicants’ claims recite the step of cutting the meat and immediately subjecting the cut meat to an initial quick freezing process of the type IQF to form a meat product, wherein the temperature reaches around -5°C in the center of a meat piece in a maximum of 1.5 hours. In contrast, Mitsuda discloses a 4-step sequential freezing process that requires the use of a freezing medium. The Mitsuda process includes:

“(A) the step of forming an ice-capsule, in which the food, initially at room temperature, is chilled with a freezing medium so as to form an ice-capsule surrounding the food, (B) the step of mild chilling, in which the food is chilled in an environment of -25° to -35° C so that the temperature of the center of the food becomes about 0 ° C, (C) the step of quick chilling, in which the food is chilled with a freezing medium of -80° to -100° C so that the temperature of the food becomes about -6° C or lower, and (D) the step of freezing-storage, in which the food is stored at a temperature of about -18° C to -20° C until consumed.” Mitsuda at col. 2, lines 17-29.

The freezing process disclosed in Mitsuda requires the step of forming an ice-capsule through exposing the fish to -80°C to -100°C using a glazing solution, and then the fish reach 0°C at the center of the food in a chilled environment of -25°C to -35°C. Mitsuda therefore teaches away from freezing methods that do not include a freezing medium.

The Office Action at page 3 alleges Examples 2 and 3 in Mitsuda disclose cutting meat and then subjecting the cut meat to a quick chilling step by blowing nitrogen gas onto the food so that the food is chilled at the center to a temperature of  $-6^{\circ}\text{C}$  or less in less than 1.5 hours. Applicants do not agree.

As discussed above, claim 1 as amended recites a step of cutting the meat and immediately subjecting the cut meat to an initial quick freezing process of the type IQF to form a meat product, wherein the temperature reaches around  $-5^{\circ}\text{C}$  in the center of a meat piece in a maximum of 1.5 hours. The meat in Examples 2 and 3 is not immediately subjected to IQF freezing following cutting. Rather, the cut meat is first sprayed with or soaked in a glazing solution containing a vegetable polysaccharide or gelatin, blown with nitrogen gas to form a rigid ice-capsule around the cut meat, and then the ice-encapsulated cut meat is placed in a chilling box to gradually chill the ice-encapsulated meat to a temperature of  $0^{\circ}\text{C}$  at its center. Once chilled to  $0^{\circ}\text{C}$  at its center, the ice-encapsulated cut meat is then subjected to the step of quick chilling by blowing nitrogen gas at  $-1000^{\circ}\text{C}$  so that the ice-encapsulated meat is chilled to a center temperature of  $-6$  to  $-8^{\circ}\text{C}$ . Once this center temperature is reached, the temperature of the blowing nitrogen gas is changed to  $-20$  to  $-30^{\circ}\text{C}$  and maintained at that level to slowly chill to ice-encapsulated meat to a center temperature of  $-25^{\circ}\text{C}$ . This process is completely different than the freezing process recited in the claims.

As discussed above, the teachings of Mitsuda must be considered in their entirety, including portions that would lead away from the claimed invention. The Office Action cannot selectively pick and choose from the teachings in Mitsuda to arrive at the claims when the teachings of Mitsuda when considered as a whole clearly teach away from the claims.

Mitsuda, unlike Applicants' claims, also does not restrict the amount of time to perform the freezing operation. Mitsuda does not control the freezing step to a certain temperature in the center of the meat product within a specific processing time as required by the claims, or disclose or suggest the packaging and high vacuum packing process required by the claims. Subjecting the meat product to an initial quick freezing process of the type IQF wherein the temperature reaches  $-5^{\circ}\text{C}$  at the center of the meat in less than 1 hour as recited in claim 1 avoids formation of ice crystals in the meat thus avoiding damage to the cellular membrane of the meat and

potential dehydration and maintains the texture of the meat. See the specification, for example, at page 7, lines 1-7. Once the temperature is reached, the product is packed in special packages with high impermeability to gases (as well as to water vapor) and then frozen to -18°C at the center of the meat in less than 2 hours. This package protects the meat against exposure to dehydration, contamination from environment, odors and surrounding liquids, and also protects the meat against oxidation.

At page 3 of the Advisory Action, the Examiner alleges Mitsuda discloses a quick chilling IQF step that is down within the range of 7-10 minutes so that the temperature of the center of the food is -6°C or lower and then adjusting the temperature of the freezing environment so that the food reaches an equalized temperature of -18 to -25°C within 40-90 minutes.

Again, Applicants note that the Examiner is neglecting to consider the teachings of Mitsuda as a whole. The sections of Mitsuda cited at page 3 of the Advisory Action correlate to steps 3 and 4 of the 4 step-freezing process disclosed in Mitsuda. The Advisory Action fails to recognize that during steps 3 and 4 of the Mitsuda process the meat product is in an ice-encapsulated state due to prior treatment with a freezing medium. As discussed above, Applicants claims recite the step of cutting the meat and immediately subjecting the cut meat to an initial quick freezing process of the type IQF to form a meat product. The claims as amended clearly do not encompass freezing methods that include a freezing medium.

The Office Action at page 3 acknowledges that Mitsuda does not disclose part c or part d of claim 1 but alleges it would have been obvious to modify the process disclosed in Mitsuda to include the packaging and vacuum system taught by Mayr. At page 4 of the Advisory Action, the Examiner notes that Mayr is only relied upon for the teachings of polyamide-polyethylene packing material as well as vacuum packaging. Applicants submit the Office Action is improperly combining the disclosure of Mayr with Mitsuda to arrive at the claims.

Applicants submit the Examiner is merely picking and choosing the portions of Mayr to support the obviousness rejection without considering the teachings of Mayr as a whole and how these teachings as a whole affect the motivation of one of skill in the art to combine Mitsuda and Mayr as alleged by the Examiner.

Mayr is directed to a laboratory technique to analyze damage to the original features of a meat product. The meat in Mayr is unfrozen before vacuum packaging. Therefore, the vacuum sealing causes the outflow of the natural and original meat fluids because the meat is not frozen until after the vacuum packaging process. The process disclosed in Mayr accordingly does not achieve the objective of the present invention which is a preserved meat product having the organoleptic properties of a fresh meat product. Moreover, the meat samples in Mayr were only tested after 11 days of storage, whereas the claimed process provides a meat product having organoleptic properties of a fresh meat product after tens of months of storage, Exhibit 1 shows that meat packaged according to the claimed process has organoleptic properties equivalent to fresh meat product after 13 months.

The logical combination of Mitsuda and Mayr results in a packaged ice capsule, wherein the ice capsule comprises the meat submerged in a freezing medium. The presently claimed invention does not make use of a freezing medium. Claim 1 recites the novel sequential steps of cutting the meat and immediately quick freezing the cut meat, packing the meat, vacuum sealing the packed meat and freezing meat again. The quick freezing step in claim 1 of the type IQF and does not include a freezing medium. The sequential steps and specific time and temperature conditions recited in the claims avoid the exudation of meat that is common to both the Mitsuda and Mayr references. Therefore, absent Applicants' disclosure, one of ordinary skill in the art would not have been reasonably motivated to combine Mitsuda and Mayr as alleged in the Office Action and Advisory Action as Mayr clearly teaches away from the combination.

Moreover, the present application is a national stage of PCT application number PCT/BR2004/00223. In the Written Opinion of the International Searching Authority, it was established that the application fulfills the patentability requirements of novelty, inventiveness and industrial applicability. Only documents defining the general state of the art, which are not considered to be of particular relevance were cited in the International Search Report (ISR). Accordingly, the application has been granted in China, Mexico, Canada, Russia, India, South Africa, Chile and Hong Kong. Applicants note that the U.S. is a party to the PCT and that none of the documents cited by the Examiner in the present Office Action were considered as state of the art in the ISR.

In view of the foregoing, Applicants submit the Office Action has failed to establish a *prima facie* case of obviousness. The cited combination of references does not disclose or suggest all the elements of the claims and teaches away from the claims. Withdrawal of the rejection is respectfully requested.

(2) Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Mitsuda in view of Mayr in further view of Weerawardena (GB 2360690). Applicants respectfully traverse this rejection.

Applicants submit the Examiner is merely picking and choosing the portions of Weerawardena to support the obviousness rejection without considering the teachings of Weerawardena as a whole and how these teachings as a whole affect the motivation of one of skill in the art to combine Mitsuda, Mayr, and Weerawardena to arrive at the claims. The combination of Mitsuda and Mayr does not disclose or suggest all the elements of the claims for the reasons discussed above. Weerawardena does not cure the deficiencies of the combination of Mitsuda and Mayr.

Weerawardena discloses an industrial process where a frozen block of fish or meat is cryogenically frozen and then tempered to a cutting temperature lower than the degradation temperature of the block, followed by slicing the block using a slicing machine and then cryogenically refreezing. This process differs from the process disclosed by the present application where the meat is prepared before cutting the meat and then the meat is quickly frozen. An intermediate stage where the meat is tempered does not exist in the presently claimed process.

In contrast to Weerawardena, the claims require stages of sequential freezing in descending steps of temperature in order to preserve the organoleptic properties of a fresh product. Moreover, the cryogenic process disclosed in Weerawardena is a much more expensive process than IQF and is not necessary in the process of the present invention. Therefore, absent Applicants' disclosure, one of ordinary skill in the art would not have been reasonably motivated to combine Mitsuda and Mayr as alleged in the Office Action to arrive at the claims.

In view of the foregoing, Applicants submit the Office Action has failed to establish a *prima facie* case of obviousness. The cited combination of references does not disclose or suggest all the elements of the claims and teaches away from the claims. Withdrawal of the rejection is respectfully requested.

**Summary**

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers or any future reply, if appropriate. Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725.

Respectfully submitted,


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